REMARKS

Claims 5-9 and 13-19 are all the claims pending in the application.

Claims 5 and 14 have been amended to further clarify the claimed invention.

New claims 20 and 21 have been added to provide additional claim scope.

Support for the amendments and new claims is found in at least paragraph 27 of the specification.

Claims 5-9 and 13-19 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Akram (U.S. Patent No. 6,946,732) in view of Chakrovorty (U.S. Patent No. 6,181,569) in view of Qi (U.S. Patent No. 6,774,497) and/or in view of Lance (U.S. Patent No. 5,697,148) and/or Ho (U.S. Patent No. 6,849,955). Applicants traverse these rejections because the cited references fail to disclose or suggest all of the claim limitations. Specifically, at least the following limitations are not disclosed or suggested:

Claims 5 and 14:

> a plurality of conductive bumps formed on the plurality of bond pads, wherein said bumps align with corresponding solder pad openings on an upper surface of the substrate, and ***wherein a standoff between said chip and said substrate is provided mainly by said conductive bumps***;

As explained in Paragraph 9 of the patent specification, a problem associated with the individual mounting of a singulated IC chip onto a substrate is the difficulty of balancing the IC chip on a single, central row of bumps. The present claimed invention overcomes this problem by mounting an array of chips with center row(s) of bumps on a substrate so that balance can be achieved. The bumps provide the necessary standoff between the chips and substrate, which is required during subsequent processing. This also enables multiple chips to be handled and processed together, rather than individually, thereby making the process more efficient and less costly [paragraphs 27 and 28].

Akram also addresses the problem of the chips being unstable when they are mounted. See col. 3, lines 28-65 and figures 3, 5 and 6. Akram, however, teaches a different solution to the problem. Rather than mounting an array of chips on a substrate, places stabilizers at the periphery of the individual chips. See stabilizers 50 in figures 8-19. These stabilizers allow a minimum uniform distance to be maintained between the chip and substrate. Col. 10, lines 7-15. By relying on the stabilizers on the periphery, Akram fails to meet the limitation that requires and that a standoff between said chip and said substrate be provided mainly by said conductive bumps.

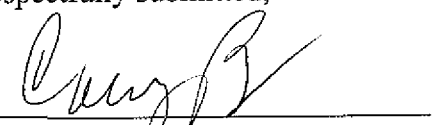
Chakravorty describes providing first metal bumps on a wafer, depositing encapsulant over the metal bumps, polishing to expose top surface of the metal bumps. Second metal bumps are provided over the exposed first metal bumps and the wafer is singulated into individual chips. Chakravorty, however, does not disclose or suggest mounting the wafer or an array of integrated circuit chips with only a center row or rows of bumps on a substrate. The bumps are located over the entire surface of the substrate. The Examiner, in paragraph 62 of the Office Action states that Chakravorty figure 7 shows that all bond pads are located in four centrally located rows. However, there is nothing in Chakravorty that suggests that figure 7 is showing only the center of the chip. The only mention of Figure 7 is in col. 6, lines 35-36, where is simply says that it is a plan view of the bumps. Everything else in Chakravorty suggests that the bumps are either distributed over the entire surface or at the periphery. Col. 13, lines 30-37.

In addition, one of skill in the art would not have combined the method of Chakravorty with Akram. The Examiner's reason for the combination is that it would enable strong stable bonds to be formed. However, as mentioned above, Akram obtains strong stable bond by using stabilizers along the periphery. Therefore, there would be no need to incorporate the procedures in Chakravorty.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Carl J. Pellegrini
Registration No. 40766t

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: March 14, 2011